

**DOCUMENTATION FOR
DIAGNOSTIC TEST (XXXX)**

SYNCLAVIER II is a registered trademark of
New England Digital Corporation.

The "Diagnostic Test" (or "XXXX") diskette is used to locate problems associated with the digital synthesizers in the Synclavier II. This diskette is *not* intended to locate problems in the computer, the keyboard, disk drives, or other optional devices that may be used with the Synclavier II. Nor should it be used to load the Synclavier II real-time performance system. A number of normal Synclavier II functions will be inoperative or will produce erratic results. In short, when you use this diskette, confine your observations to the tests described below.

The use of an audio monitoring system of reasonable quality is recommended for testing, although a pair of headphones plugged into the HEADPHONE jack on the back of the keyboard unit may be used to locate obvious problems. A triggered oscilloscope will help to find more subtle problems and to measure ac and dc voltages.

IMPORTANT: On systems equipped with filter switches, both switches should be in the OUT (up) position.

Conducting the Tests

Most of the diagnostic tests must be individually performed on each of the eight channels in each synthesizer unit. The diagnostic software provides special procedures for accessing individual synthesizers and channels.

The PARTIAL TIMBRE SELECT buttons are used to select a specific synthesizer unit. Button number 1 is used to select the left-most synthesizer in the bin (the first eight voices). The higher-numbered buttons correspond in sequence to the synthesizers on the right.

IMPORTANT: When testing systems with more than eight voices, you *must* place the PARTIAL TIMBRE SELECT buttons in the BLINKING mode, just as you would to solo a partial timbre during real-time performance. Otherwise, errors in the audio waveforms may occur.

Once a synthesizer is selected, the TUNING BASE button is used to access a particular channel within that synthesizer. When you press this button, a channel number, "0" through "7", will be displayed in the display window, indicating which channel is accessed. When channel "7" is displayed in the window, pressing TUNING BASE once more will cycle back to channel "0".

The tests consist of eight diagnostic timbres that are stored on TIMBRE BANK 1 on the Diagnostic Diskette. These eight timbres are recalled one at a time and are checked on each of the eight channels (using the TUNING BASE button) in each of the synthesizer units (using the PARTIAL TIMBRE SELECT buttons). Note that the test timbre in ENTRY 7 need be checked only once for each synthesizer unit.

First place the Diagnostic Test Diskette in the left-hand or system disk drive and press LOAD. Next, press button 1 under TIMBRE BANK. Then, press the eight ENTRY buttons one at a time and perform the tests associated with each.

THE TESTS

ENTRY 1 - Sine Wave

Check each channel of each synthesizer.

The signal should be a fairly clean sine wave. Some stepping will be seen on lower notes; less should be seen on higher notes.

ENTRY 2 - FM

Check each channel of each synthesizer.

The signal should begin as a sine wave followed by a slow attack to FM peak and a slow decay back to the sine wave.

ENTRY 3, 4, 5 - Higher-Order FM

Check each channel of each synthesizer, paying especial attention to the attack portion of the sound.

These signals should begin as sine waves followed by slow attacks to higher peak FM values and much faster decays to sine waves.

ENTRY 6 - Volume Decay

Check each channel of each synthesizer, looking for a smooth decay.

The signal should be a piano-like timbre with a 1 - 2 second decay.

ENTRY 7 - Waveform Memories

Perform this test only once for each synthesizer unit. This is not a channel-by-channel test.

The signal should consist of two sine waves: 50 percent relative strength for Harmonic #1 and 50 percent for Harmonic #5.

Follow this procedure:

1. Press HARMONIC GROUP SELECT button 1-12 and HARMONIC CONTROL button 5. The number 50.0 will appear in the digital display window.
2. Press a key on the keyboard. *While holding it down*, slowly turn the control knob to the right to increase the number from 50.0 to 53.1 in 32 steps. Each of the 32 steps represents a waveshape memory. Make sure that each step is visited and that at each step the waveform is clean. If a step is missed because you change the display numbers too fast, press ENTRY 7 and HARMONIC CONTROL button 5 again to repeat the test from the beginning.
3. Release key at the end of the test on each synthesizer.

Note that if the channel number is 0 at the start of this test, a glitch will be heard at each step transition. This is normal.

ENTRY 8 - Portamento

Check each channel of each synthesizer.

The signal should be a sine wave with a small amount of FM and a slow portamento rate.

Press the lowest C on the keyboard. Release and press the highest C. Listen for glitches over the full range. Release and press lowest C. Listen for glitches over full range.

When you locate a problem, contact New England Digital.